NORTHERN FRONT RANGE INTERAGENCY AVIATION OPERATIONS PLAN

ARAPAHO AND ROOSEVELT NATIONAL FORESTS PAWNEE NATIONAL GRASSLANDS

Last Revision: June 2004





AVIATION SAFETY.....
IT'S NO ACCIDENT

WHEN (BEFORE) ALL ELSE FAILS..... READ THE DIRECTIONS!

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10 STANDARD AVIATION ORDERS

1. Ensure Pilot and aircraft are approved for the planned flight (mission).

2. Obtain weather forcasts, winds and visibility within prescribed limits.

3. Determine flight plan is complete, filed with agency, flight following proceedures established and flight following operational.

4. Use only personnel trained and qualified for mission and follow agency standard operating procedures.

5. Ensure weight and balance calculations are completed and being adhered to by the pilot.

6. Pilot briefed by personnel on intended mission and hazards.

7. Obtain hazard map and reveiw for low-level flights.

8. Provide aircraft safety briefing to all passengers.

9. Determine pilot flight/duty limitations are not exceeded.

10. Stay alert, be calm, think clearly, and act decisively.

12 AVIATION SITUATIONS THAT SHOUT "WATCH OUT!"

1. Any deviation from assigned flight plan or mission, you are driven by a sense of urgency.

2. It is unclear who is in charge of the mission.

3. Not informed on strategy, tactics, and hazards.

4. Instructions and assignments not clear, conflicting priorities.

5. No communication link with ground crews/supervisors, and communications are getting tense.

6. Other aircraft assigned/operating in the area.

7. There is a better type aircraft for the mission, or way to do it.

8. An escape route has not been planned for.

9. Cargo has not been checked or secured.

10. Required survival equipment is not available.

11. Required personal protective equipment is not available or not worn.

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Introduction

This aviation operations plan provides guidance for an effective, efficient, and safe aviation program for the interagency wildfire cooperators of the northern front range of Colorado. The plan is a guide that condenses direction from the Forest Service Manual (FSM 5700), Forest Service Handbooks for Fixed-wing aircraft (FSH 5709.11), Helicopters (FSH 5709.12), plus additional Forest Aviation Policy and interagency agreements. This Plan is an addition, not a replacement for Forest Service Manuals and Handbooks. Any questions you have that are not answered by this plan should be taken first to the Forest Aviation Officer (FAO) or Acting, and second, to the Regional Aviation Officer, if the FAO is not available. It is important that the users of aircraft always put safety first!

This plan is written for the individual who is unfamiliar with current Forest Service and interagency aviation policies and needs a quick reference. This plan includes information for the user of the aircraft including: definitions of terms, pre-flight planning, flight operations, and post-flight procedures for most Forest Service and interagency aviation missions. These missions include point-to-point and reconnaissance, restricted airspace, coordinating news media, air tanker, and helicopter operations, disaster preparedness, outservice cooperation and inspections.

The interagency cooperators of the northern front range of Colorado have a diverse aviation program that includes both fixed wing aircraft, helicopters and aviation bases. Area topography ranges from low rolling plains in the east to elevations greater than 14,000 feet along the Continental Divide. Mountain weather changes quickly and could produce adverse conditions, such as thunderstorms, high winds, icing, turbulence, downdrafts, etc. It is **YOUR** responsibility as a aircraft user to utilize aircraft in a responsible and safe manner in compliance with Forest Service and interagency policy.

Local Topographic and Climatic Conditions

The elevation of the area ranges from 3,000 feet on the plains of eastern Colorado to over 14,000 feet on the major mountain peaks of the forest. The majority of the area is steep and highly dissected with canyons and drainages.

The climate is characterized by frequently windy springs. This is followed by the unstable air conditions in June, July, August, and September with thunderstorms developing over the mountains; these storms generally move to the north and east. Upslope conditions occur in winter and spring where fog or rain and snow conditions form on the plains and back up against the mountains. In this situation front range airports occasionally experience low or near zero ceilings, while clear weather may prevail at higher elevations above 7000 feet. There is also a great difference in air temperatures at Front Range airports and those in the mountains.

These varied climatic conditions can create potential hazards to aviation safety and requires thorough pre-mission planning. Some specific hazards that may be encountered are:

1. High density altitudes.
2. Rapid deterioration of weather conditions.
3. Turbulence, up and down drafts, strong winds, wind shear, and thunderstorms.

Responsibilities and Authorities

Responsibilities and authorities are addressed in the Forest Service Manual under 5700 and interagency guides and plans.

1. Regional Aviation Officer, Tom Landon, 303-275-5740, Lakewood.

The Regional Aviation Officer is responsible for aviation programs within Rocky Mountain Region

2. Forest Supervisor, 970-498-1100, Fort Collins.

The Forest Supervisor is responsible for all aviation activities within the Forests. The Forest Supervisor shall:

a. Establish an aviation program responsive to the forests needs.
b. Provide qualified personnel as needed to manage the program.
c. Ensure that aviation projects are planned in advance.
d. Approve all aviation operations on the forest prior to starting.

3. Forest Aviation Officer, Mike Foley, 970-498-1245, Fort Colllins.

The Forest Aviation Officer (FAO) is responsible for coordinating, training, supervising, and inspecting all phases of aviation activities for the forests.

4. Fort Collins Interagency Dispatch Center, Mark Nelson, 970-498-1348,

The FTC Manager is responsible for ordering and dispatching aircraft, ensuring that flight plans have been made, flight following, coordinating aviation projects, and maintaining vendor aircraft and pilot agreements and inspections. The Center Manager Will serve as Acting FAO in absence of FAO.

5. District Rangers

a. Supervises aviation operations on the District.
b. Keeps the Forest Supervisor and Forest Aviation Officer informed concerning the existing use of aircraft and the need for aircraft services to accomplish District work.
c. Requests technical assistance in planning and supervision of aviation operations.
d. Ensures that project aviation plan has been developed and approved for all planned aviation projects.

6. All Forest Service Employees/Interagency Cooperators

a. All personnel requiring aircraft services shall place their order with FTC. All personnel are responsible for reporting any aviation activity observed which they believe to be done in a hazardous manner to the appropriate agency authority.

b. When conditions indicate further aviation activity will jeopardize the safe conduct of the operation, employees will initiate action to stop the operation and report using the SAFECOM format (FS-5700-14) circumstances and action taken to the official in charge.

c. Prepare Project Aviation Safety Plans in conjunction with FAO.

Definitions: Within this plan are terms and words that need to be defined: They are:

Above Ground Level (AGL) Altitude - Altitude expressed in feet, measured above ground level.

Above Terrain Level (ATL) Altitude - Altitude expressed in feet measured above the canopy or highest point along the flight path.

Aircraft - A vehicle that is used or intended to be used for flight in the air. May be fixed or rotary wing (airplane or helicopter).

Aircraft Accident: An occurance associated with the operation of an aircraft which takes place between the time any person boards the aircraft with the intension of flight and all such persons have disembarked, and in which any person suffers death or serious injury, or in which the aircraft receives substantial damage.

Aircraft Incident: an incident other than an incident, associated with the operation of an aircraft, which affects or could affect the safety of operatiomn

Airplane - An engine driven fixed wing aircraft heavier than air that is supported in flight by the dynamic action of air passing over its wings.

Airspace Conflict: A near-air collision, intrusion, or violation of airspace rules.

Aviation Hazard: Any condition, act, or set of circumstances that exposes an individual to unnecessary risk or harm during aviation operations.

Center of Gravity - This is the balance point of an aircraft. This can be changed by loading the plane differently. A change in the center of gravity will affect the performance of the aircraft.

Chief of Party - Person who assumes responsibility for the Forest Service pre-flight, during flight, and post-flight operations, other than the duties and responsibilities of the pilot. This person is the Forest Service Officer who is in charge of the flight operations from its inception.

Civil Aircraft - Aircraft other than public aircraft.

Density Altitude - A measure of air density as affected by temperature and altitude. For example, as you go higher from sea level the thinner the air becomes. This is further affected by temperature; the higher the temperature the more the air expands. Therefore, density altitude affects the ability of the wings to lift since the thinner the air the less lift. Density altitude also affects engine performance producing less horsepower.

Emergency Locator Transmitter (ELT) - a radio transmitter attached to the aircraft structure that operates from its own power source on 121.5 HHz and 2430 MHz. It aids in locating downed aircraft by radiating a downward sweeping audio tone. It is designed to turn on automatically in case of an accident.

FAA - Federal Aviation Administration

FAR - Federal Aviation Regulation
Fatal Injury: Any injury that results in death within 30 days of the accident.

Federal Aviation Administration (FAA) - is charged with regulating aviation activities.

Flight following - Communications system where positive aircraft location is continually monitored by a ground station. Flight following may be accomplished by either FAA or Forest Service.

Flight Service Stations (FSS) - Is an Aviation traffic facility that provides pilot briefing, enroute communications, and search and rescue services, assistance with lost aircraft and weather observations, plus many other activities for pilots.

Forced Landing: A landing necessitated by failure of engines, systems, or components which makes continued flight impossible, and which may or may not result in damage.

Forest Aviation Officer (FAO) - person on the Forest who has the responsibility for the safe and proper use of aircraft on the forest.

FTC - Fort Collins Interagency Dispatch Center.

General Aviation: That portion of civil aviation that encompasses all facets of avition except air carriers.

Incident with Potential: An incident that narrowly misses being an accident and in which the circumstances indicate significant potential for substantial damage or serious injury. Final classification will be determined by the USFS Avition Safety Manager.

Helicopter - Any of a class of engine-powered heavier than aircraft that are lifted and sustained in the air by rotating wings or blades turning on a vertical axis.

Hobb's Meter - An hour time clock that gives hours and tenths of hours, that runs off the engine, generator, or oil pressure used to record flight time and is located generally on the co-pilots side of the instrument panel.

Instrument Flight Rules (IFR) - A type of flight plan that is required when the basic weather is less than 3 miles visibility, a 1000' ceiling and the aircraft cannot remain clear of the clouds. Special aircraft and pilot certification is required.

Incident - An occurrence out of the normal realm of everyday operations that may have the potential to lead to an accident.

Maintenance Deficiency: An equipment defect or failure which affects the safety of operations, or that causes an interruption to the services being performed.

MSL (Mean Sea Level) - altitude above mean sea level.

Military Training Route (MTR) - Designated routes utilized by the Department of Defense for military training. Aircraft are often in close proximity to the ground.

"N" Number - Identification number located on the tail section of an airplane assigned by the FAA.

Non-chargable Accidents: Those in which USFS was not exercising operation control over the aircraft at the time of the incident but in which USFS employees or USFS procured aircraft were involved.

NOTAMs - Notice to Airmen - messages given by Flight Service Stations to airmen that include airspace airport and runway closures and may include the special warnings to pilots that are broadcast by radio.

Office of Aircraft Service (OAS) - The organization supplying aviation services to the Department of the Interior.

Payload - Amount of weight an airplane can carry. This includes fuel, oil, passengers, and cargo. This will vary according to density altitude.

PAX - Passengers

Pilot in Command - The pilot responsible for the operation and safety of an aircraft and its occupants during flight.

Point-to-Point - A flight from one point to another point with no intermediate stops; usually carrying passengers.

Precautionary Landing: A landing necessitated by apparent impending failure of engines, systems, or components which makes continued inadvisable.

Public Aircraft - Aircraft used only in the service of a government.

Reconnaissance - A flight to observe an area by aircraft usually for detection of fire or insect damage. It is never flown at less than 500 feet AGL under Forest Service regulations.

Serious Injury: Any injury which: (1) requires hospitalization for more that 48 hours, commencing within 7 days from the date of injury; (2) results in fracture of any bone; (3) causes sever hemorages, nerve, muscle, or tendon damage; (4) involves any internal organ; (5) involves second or third degree burns, or any burns affecting more than 5 percent of the body surface.

Special Use Air Space (SUA) - Air space that is restricted or used for special purpose. Usally military in nature.

Statistically Accountable Accident: Those in which the USFS exercised operation control of the aircraft.

Substantial Damage: Damage or failure which adversely affects the structural strength, performance, or flight characteristics of the aircraft, and which would normally require major repair or replacement of the affected component. Engine failure or damage limited to an engine if only one engine fails or is damaged, bent fairings or cowlings, dented skin, small puncture holes in the skin or fabric, ground damage to rotor or propeller blades, and damage to landing gear, wheels, tires, flaps, engine accessories, brakes, or wing tips are not considered " substantial Damage" for the purpose of 49 CFR Part 830.

Military Training Route (MTR's) - Predetermined routes used by the military for training pilots. May include high speed and low flying aircraft.

Useful Load - The difference between empty weight and gross weight.

Visual Flight Rules (VFR) - The flight rules utilized for flight when basic weather is better than 3 miles visibility and a 1,000' ceiling and positive control by air traffic control is not desired.

Visual OMNI Range (VOR) - A high frequency navigation transmitter utilized by aircraft to determine azimuth information for navigation purposes.

RON - Remain overnight

Area Airports and Heliports

AIRPORT DIRECTORIES. See APPENDIX B (Airport Directories) (www.airnav.com)

1. Airports: See appendix "B" for information on Locally used airports.

***CAUTION - HIGH DENSITY ALTITUDE IN SUMMER, CHECK AIRCRAFT PERFORMANCE.**

2. Heliports/Helispots

There is one established and approved helibase on the forest. It is located at the Forest Service Work Center at Redfeather Lakes. Refer to Redfeather Helibase Operations Plan. Plan #5.

When necessary to construct helispots, they will be built in accordance with IHOG standards.

Aircraft Qualification and Certification

Aircraft approved for U.S.Forest Service and interagency use will be issued cards indicating missions for which they are approved. Cards will be valid from date of issue through June 30 of the following year, in most cases. Cards will be carried aboard the aircraft when operating on a Forest Service or interagency mission, and will be presented for inspection upon the request of any employee. Any aircraft approved and carded by the OAS may be used by the Forest Service for those specific missions authorized by the OAS (low-level recon and game counting excepted). Forest Service re-inspection and carding will be at the discretion of the Regional Air Officer, or Zone Officers.

1. All aircraft will be functionally equipped as specified either in the contract or the rental agreement form.

2. Aircraft will be equipped in accordance with FAR 135, and will meet or exceed all equipment requirements for missions for which the aircraft is approved. This includes, but is not limited to, flight into IFR conditions, and oxygen requirements for flights over 10,000 feet.

3. Each aircraft will also be equipped with the following safety-related equipment.

a. An FAA approved shoulder harness for each front seat occupant.

b. One or more FAA approved strobe lights.

4. Aircraft shall not be approved if engine time exceeds the manufacturer's recommended TBO. New or overhauled engines must accumulate three hours of operating time prior to USFS use. This time will include a minimum of two hours continuous flight time on the engine. In the case of a double engine change, each engine shall have a minimum of five hours flight time on that aircraft, at least two hours of which shall have been continuous.

5. All manufacturers' Mandatory Service Bulletins shall be complied with.

6. All maintenance records and other documents needed to verify data for aircraft approval shall be made available for the inspectors.

7. Single engine aircraft will not be approved for night or IFR operation. Certain night operations not involving passengers may be conducted at the discretion of the RAO or Zone Officers as outlined under OPERATING RULES. The pilot is the final authority as to the safety of the mission.

8. All aircraft flown on Forest Service or interagency missions within Region 2 will have the following minimum engine requirements:

a. Single engine - 225 hp. Less than 225 hp must be turbocharged with a minimum of 200 hp acceptable.
b. Multi-engine - 260 hp for each engine. Less than 260 hp must be turbocharged with a minimum of 200 hp acceptable for each engine.

Aircraft Availability

1. Forest Service

Currently, there are a total of four USFS aircraft operated by the Aviation Group in the Rocky Mountain Region. They are based most of the year at Jeffco Airport in Broomfield, CO. The aircraft are available to other staff disciplines on request to the dispatch Center.

The following comprises a list and description of available USFS aircraft.

a. A Beechcraft Baron twin engine airplane, fully pressurized up to altitudes of 25,000 feet. The aircraft is capable of flight in instrument meteorological conditions (IMC) with an average flight leg speed of **180 knots** (knots = nautical miles per hour) The aircraft are capable of flying five passengers with very light luggage* over a leg length of approx. 420 miles. With four passengers normal luggage** over a leg length of 455 miles. Three passengers normal luggage** over a leg length of 620 miles. Two passengers normal luggage** over a leg length of 740 miles.

The **flight use rate** charged to Forest Service Customers is **$430.00** per flight hour. For other agency use a **fixed operating rate** is added as a daily charge of **$ N/A** per day.

* Light luggage equates to an overnight kit and a brief case.
** Normal luggage equates to a soft outer shell suitcase with a total weight of 25 to 35 lbs.

b. A Single engine Cessna TU206 is available for project work, fire or administrative transport. It is capable of high altitude mountain flying, and is not restricted from the airports listed in the R2

supplements of the Fixed Wing Handbook. The aircraft's normal configuration is six seats with passenger seating for five and light luggage. We have derated the aircraft to a normal load of one pilot and four passengers with normal luggage capability. In **some** cases,depending on mission destination and duration, the sixth seat would be available for full seating capacity with luggage.* The aircraft cruises at approximately **115 Knots** and is capable but restricted from flying into known instrument meteorlogical conditions and flight after official sunset plus thirty minutes. The aircraft is configured with a camera port capable of mounting a video tape camera oriented vertically to provide a continuous stream of video data for later interpretation and analysis. The aircraft is currently equipped with Global Positioning System precision navigation, and a 9600 Channel Wolfsberg Tranceiver for Agency communications.

The Cessna 206 is capable of an average leg length of 460 miles with four passengers plus fuel reserves, and approximately 345 miles with five passengers (with mission & destination restrictions) plus fuel reserves.

The **flight use rate** charged to Forest Service Customers is **$160.00** per flight hour. For other agency use a **fixed operating rate** is added as a daily charge of **$55.00** per day.

c. A Beechcraft King Air is a twin engine turbo prop, fully pressurized airplane, capable of flight in all meteorlogical conditions at flight altitudes up to 31,000 feet. The aircraft has an average flight leg speed of 210 knots. The aircraft is configured for aerial single frame photographic applications to include infrared multispectrum photography or aerial video applications. The aircraft can be reconfigured for passenger seating with a capacity of eight passengers and one pilot. The King Air is capable of an average leg length of 875 miles with eight passengers plus normal baggage, 990 miles with seven passengers, 1100 miles with five passengers and 1250 miles with four passengers.

This airframe is not financed for overhead expenditures except for 180 day period every year when it is dedicated to photo missions. Because of this, there is a necessity to charge both a flight use rate and a fixed operating daily rate. Forest Health Technology Enterprise Team is the priority user of the King Air. When not dedicated to Forest Health, it is available to other staff disciplines. The **flight use rate** is **$400.00** per flight hour and the fixed operating rate is **$600.00** per day. An example flight for eight people traveling for 4.3 hours or 875 miles would be $1720.00 plus $600.00 for a total of $2,320.00 which would be an average cost of $290.00 per passenger. The fixed rate would be charged every day the aircraft was away from home base regardless of flight time.

2. Call-When-Needed Aircraft: See APPENDIX C,
CWN Agreements are posted at the following website. (CWN Aircraft Listing)
(www.aviation.fs.fed.us/carding/index.asp)

The Forest has annual blanket purchase agreements with air charter operators. See above website for listing, directory, and appendic C on CWN Fixed wing aircraft.

The Colorado State Forest Service has call-when-needed (CWN) single-engine light airtankers. These aircraft specifications vary annually. Contact FTC for current information. Fort Collins Interagency Dispatch Center will maintain a current copy of the SE/AT Operations Plan.

3. Contract Aircraft

The Pike –San Isabel National Forests annually contracts a light helicopter during fire season; this ship is stationed at the Monument Fire Center, Monument, Colorado, and is available for fire and resource project work.

A Type III Helicopter will be stationed for one month each year (Mid June-Mid July) at the Redfeather Helibase. This will be a detailed ship from the Black Hills National Forest.

A heavy airtanker for aerial delivery of fire retardant is sometimes available at the Jeffco Airtanker Base during fire season.

All of these aircraft are ordered through FTC.

Pilot Qualification and Certification (See attached Pilot Safety Briefing)

Pilots approved for U.S. Forest Service and interagency use will be issued cards indicating missions for which they are approved. Cards will be carried on the pilot's person whenever flying a Forest Service or interagency mission, and will be presented for inspection upon the request of any employee of the U.S.Forest Service or cooperating agency. Pilots will fly only those missions for which they have been approved. Any pilot who has been approved and carded by the Office of Aircraft Services may be used by the Forest Service for those specific missions authorized by the OAS with the exception of any operations conducted below 500' AGL. Forest Service carding will be at the discretion of the Regional Aviation Officer or Zone Officers.

1. Pilots must possess a current, valid Second Class Medical Certificate or better.

2. Pilots must possess a current, valid, and unrestricted FAA Commercial License (or better), with instrument rating, category, class and type ratings for the aircraft to be used. In addition, pilots will meet the following minimum flying experience requirements:

ALL AIRPLANES	FLIGHT HOURS
Total Time Airplanes	1500
Pilot-In-Command in Airplanes	1200
PIC in Airplanes, As Follows:	
Category & Class to be flown	200
Make & Model to be flown	25
Cross Country	500
Operations in Typical Terrain	200
Night	100
Instrument - actual/simulated	75
Preceding 12 months	100
Preceding 60 days	10

3. All pilots must possess FAR Part 135 Letter of Competency for the type(s) of operation for which approval is sought.

4. All Multi-engine operations will require a current 6 month IFR (FAR 135.297) competency check (FAA 8410-3) on file.

5. A Forest Service inspector pilot may require that any pilot undergo a flight check prior to approval and carding.

Flight checks will normally be required for pilots in the following situations:

a. Pilots not previously carded by the Office of Aircraft Services or the U.S.Forest Service, Region 2. These pilots must demonstrate their competency in flight in the category and class of aircraft for which certification is to be granted.

b. Pilots to be carded for reconnaissance who have not been approved for such operations. The pilot must demonstrate in-flight skills for maneuvering in steep terrain and other such maneuvers as the pilot inspector may require.

Pilot Authority and Responsibilities

The pilot will be provided with a copy of the contract and will become familiar with the specifications. Pilots flying on rental agreements should be familiar with the specifications listed on the Blanket Purchase Agreement.

The pilot will study local area maps and become familiar with hazards to flight such as towers, power lines, cables, mountainous terrain, and military low level training routes. The Forest Air Officer and/or local Fire Staff will be very beneficial in assisting you with this orientation.

The pilot is responsible for:

1. The safe accomplishment of the mission, security and condition of the aircraft and cargo, and the safety of the passengers.
2. Observing policies concerning operation of the aircraft, authorized passengers, and mission requirements.
3. Postponing, changing, or cancelling flights when he/she believes existing or impending conditions make them unsafe.

Forest Service management has mission control. We order the mission, and delay or cancel the flight as deemed necessary. The pilot has the last say as to whether the mission can be accomplished safely. This is a team approach. The result is safe mission accomplishment.

Pilot Flight and Duty Limitations

All pilots flying Forest Service missions will be limited to the following tours of duty. All flying, parts 135, 133, 137 and part 91 (including ferry flights) count towards that limitation.

1. Flight time will not exceed a total of 8 hours per day. Two pilot crews flying point-to-point (airport to airport, heliport to heliport, etc.) will be limited to 10 hours flight time per day. (An airtanker that departs airport A, drops on a fire, then flies to airport B is not point-to-point.) Pilots flying point-to-point who are also flying other Forest Service missions will be limited to 8 hours flight time per day.

2. Flight time will not exceed a total of 42 hours in any 6 consecutive days.

3. Pilots accumulating 36 to 42 hours of flying time in any 6 consecutive days will be off-duty the following full calendar day.

4. Within any 24 hour period, pilots will have a minimum of 10 consecutive hours off duty immediately prior to the beginning of any duty day.

5. Duty includes flight time, ground duty of any kind, and standby or alert status at any location.

6. During any 14 consecutive days, pilots will be off duty for 2 full calendar days. Days off duty need not be consecutive. A duty day is any day a flight is made or 4 hours or more of duty is performed.

7. With regards to aircraft operated under parts 133 and 137,the Regional Aviation Officer may waive the "consecutive" part of paragraph 4, so that pilots flying such missions as aerial application may have 2 shorter off-duty periods, provided they aggregate 10 hours or more.

Operating Rules

All operations, unless otherwise more limited, will be conducted in strict accordance with applicable FAR'S. Any violations will be reported to the FAA.

1. PILOT AND AIRCRAFT USE. Only pilots and aircraft specifically approved and carded by the USFS or OAS will be used, and then only for those missions for which approved.

Dispatch will arrange for the plane and time, but it is up to the Chief of Party to check for proper "N" number of plane, Forest Service aircraft card, and the pilot's Forest Service card. There are a number of different cards for both aircraft and pilot. These cards may be Office of Aircraft Services (OAS).

When checking aircraft cards, note the expiration date and "N" number on the aircraft tail (these must match) what the aircraft use is carded for and the inspectors signature. If you have any questions about the card or the plan, call dispatch or the Forest Aviation Officer.

Pilot cards should be checked for expiration date, type of aircraft, type of authorized use, proper name, and type of flying, such as day and night, VFR and/or IFR.

Cards are not required for scheduled commercial airlines. If you are a licensed pilot, you may not fly on official business unless approved by Regional Aviation Officer and carded.

The following types of aircraft will not be used by Forest Service employees for transportation:

a. Aircraft that are not carded.
b. Air tankers.
c. Aerial application aircraft - seeding, spraying.
d. Helicopters carrying a sling load.
e. Military aircraft - unless there is written approval from the Regional Aviation Officer.
f. Any aircraft that does not have a fully operational radio system.

2. PRE-FLIGHT. The following applies to both point-to-point travel and reconnaissance flights: Aircraft needed for fire or project work will be ordered through the dispatch center. The dispatch center will obtain the aircraft for you. When ordering aircraft, specify the number of passengers, expected duration of flight, mission, and destination. This should be done by the Chief of Party.

If you are not sure of what you need for aircraft, consult your Forest Aviation Officer. It is important to note that an aircraft may have seats for "x" number of passengers, but may not be able to carry all of the load due to performance capabilities. Ordering should be done at least a week or two in advance unless it is an emergency. Most aircraft are available on a first-come-first-service basis unless it is an emergency.

You should tell dispatch of your flight plans in advance in order that preflight planning can be done. If any changes are made, both dispatch and the pilot should be notified. Pilots need to be notified of passenger weights and cargo so weight and balance and fuel computation can be accomplished. The pilot must know approximate duration of the mission and/or approximate distance. The pilot is responsible for computing fuel reserves so be ready to give specifics of approximate duration of the mission. Duration could be expressed in hours or distance.

3. PREFLIGHT INSPECTIONS. Daily preflight inspections by the pilot are mandatory. The preflight inspection will be accomplished prior to the first flight of the day and prior to the start of the daily availability (if applicable).

Watch- out situations for preflight operations are listed below:

a. Overloading of aircraft - check with pilot!
b. Density altitude - affects performance !
c. Marginal weather - stay at home!
d. Single engine at night - never!
e. Radios not working - don't go!
f. No preflight planning
g. Hazardous materials as cargo

4. AIRCRAFT CLEANLINESS. Aircraft will be maintained in a neat and clean condition, both inside and out.

5. SUBSTITUTE AIRCRAFT. A carded aircraft of different make and model will not be substituted for that ordered without the prior approval of the Forest Service Dispatcher who ordered the flight.

6. LOADING PROCEDURES. The pilot will insure the aircraft is operated within allowable weight and balance conditions. Performance charts will be used to determine aircraft performance. Cargo will be secured when carried within the cabin. **All** engines will be shut down while loading or unloading passengers or cargo.

7. CHECKLIST. Pilots shall have available and use a cockpit checklist.

8. OPERATING INFORMATION. The operator must provide in current and appropriate form, accessible to the pilot at the pilot station, all charts and documents as required by FAR 135.83. And the pilot shall use them.

9. STERILE COCKPIT/UNCONTROLLED AIRPORT PROCEDURES.

It is essential that pilots be alert, look for other traffic, and exchange traffic information with other pilots when approaching or departing from an airport without an operating tower. All Forest Service employed or contracted pilots will utilize the common traffic advisory frequency (CTAF)

designated for the airport to communicate their intentions and to obtain airport and traffic information. Communications will be established with a flight service station (FSS), a unicom station, other ground facility if available, or by making self-announced broadcasts, whichever is appropriate for that airport. The CTAF for a particular airport can be obtained by consulting the FAA's Airport Facility Directory, AOPA's Airports USA, Flight Guide publication, WAC Charts, Sectionals, or Jeppesen approach charts if so charted as an Instrument Approach Airport (IPA).

Arrival Procedures - Communications

1) Pilots of arriving aircraft will select and monitor the designated CTAF or ATC assigned frequency when the aircraft is not less than 10 miles from the airport, except when FAR's or local procedures require otherwise.

2) Communications will be established and maintained with the appropriate ground facility not less than 5 miles from the airport or the pilot will make self-announced broadcasts if no ground facility is available.

3) Communications will include the pilot's intentions, aircraft location, altitude, and any other information the pilot deems necessary to ensure the safe outcome of the arrival.

4) Sterile cockpit procedures will be maintained at all times while within a 5 mile radius of the airport. No radio or cockpit communication will be performed during that time that is not directly related to safe flight of the aircraft until after landing and clearing the runway.

Uncontrolled Airport Arrivals - Traffic Patterns/Procedures

1) When two or more aircraft are approaching an airport for the purpose of landing, the aircraft at the lower altitude has the right of way, but it shall not take advantage of this rule to cut in front of another which is on final approach to land, or to overtake that aircraft (14 CFR Part 91.113(f).

2) Airports without operating control towers usually have a segmented circle visual indicator system. The device provides visual information on established traffic patterns and comprises the following components: Wind Direction Indicator, Landing Direction Indicator, Landing Strip Indicators, and Traffic Pattern Indicators. Before entering the traffic pattern at an uncontrolled airport or an airport without an operational tower, the pilot should be concerned with the indicator for the approach end of the runway to be used. When approaching for landing, all turns must be made to the left unless the airport displays approved light signals or visual markings indicating that turns should be made to the right, in which case the pilot must make all turns to the right; and each pilot of a helicopter must avoid the flow of fixed-wing aircraft (14 CFR PART 91.126).

The FAA and Airman's Information Manual (AIM) recommends the following procedures for fixed-wing aircraft entering the traffic pattern at uncontrolled airports:

1) Enter the traffic pattern in level flight, abeam the midpoint of the runway, at traffic pattern altitude (TPA).

2) Maintain pattern altitude until abeam the approach end of the landing runway on the downwind leg.

3) Complete the turn to final at least one-quarter mile from the runway.

4) If parallel runways exist, do not overshoot final or continue on a track which will penetrate the final approach of the parallel runway.

Departure Procedures - Communications

1) Pilots of departing aircraft will select the designated CTAF or ATC assigned frequency, establish and maintain communications or make self-announced broadcast prior to taxiing, and announce their departure intentions on the appropriate frequency prior to taxiing onto the active runway and prior to take-off roll.

2) Communications will include runway departing, direction of flight after departure, current altitude and altitude climbing to and any other information the pilot deems necessary to ensure a safe outcome of the departure.

3) Sterile cockpit procedures will be maintained at all times while within a 5 mile radius of the airport. No radio or cockpit communications will be performed during that time that is not directly related to safe flight of the aircraft.

4) The CTAF or ATC assigned frequency will continue to be monitored until the aircraft is at least 10 miles from the airport, except when FAR's or local procedures require otherwise.

Uncontrolled Airport Departure Procedures

The FAA and Airman's Information Manual (AIM) recommend the following procedures for fixed-wing aircraft when exiting the traffic pattern at an uncontrolled airport:

1) On takeoff, maintain runway heading until beyond the departure end of the landing runway.

2) If remaining in the traffic pattern, begin the turn to crosswind beyond the departure end of the runway and within 300 feet of pattern altitude.

3) If departing the traffic pattern, continue straight out or exit with a 45-degree left or right turn beyond the departure end of the runway after reaching pattern altitude.

4) If parallel runways exist, do not continue on a track which will penetrate the departure path of the parallel runway.

Sterile Cockpit

Sterile cockpit procedures will be maintained, whenever feasible, within 5 miles of all airports whether controlled or uncontrolled.

Exception to Sterile Cockpit Requirement

There may be occasions when there is a fire within 5 miles of an airport making it impossible to maintain the sterile cockpit. Under these circumstances, the departing aircraft shall maintain a sterile cockpit until departing the traffic pattern and reaching final altitude, at that time performing any

mission required communications. The pilot will continue to monitor the CTAF frequency until engaged in the firefighting activity but should continue to monitor the CTAF if feasible.

Upon completing the fire mission or being released from the fire, the pilot shall immediately select and monitor the CTAF frequency, if not already monitoring it, and maintain a sterile cockpit as soon as practical, but no later than upon entering the traffic pattern.

Definitions:

Uncontrolled Airport Any airport that does not have an operating control tower. This includes airports at which control towers operate only during certain hours and is considered uncontolled when the tower is closed.

Sterile Cockpit Procedure by which the crew of an aircraft do not perform any conversations between each other, with other aircraft or with any ground facility that are not directly related to flying the aircraft in a safe manner. Normally this would consist of reading checklists, communication with Air Traffic Control (ATC), Flight Service Stations, a Unicom, or other aircraft with the intent of ensuring separation from other aircraft or complying with ATC requirements. Ordering fuel, ground services, or checking in with the dispatch facility should not be accomplished during this time.

10. PASSENGER MANIFEST. No passengers other than those authorized by the Forest Service may be carried on flights. Any change in passengers or crew members must be reported to a Forest Service dispatcher before the flight proceeds. Passenger names and weights and cargo weights must be accurately recorded for each flight.

11. HAZARDOUS MATERIALS.(For operators approved by the FAA for Hazardous Materials transportation) All hazardous materials shipped by air must be transported in accordance with 49 CFR Hazardous Materials Regulations, Part 175, Carriage by Aircraft. Fuel for chain saws, pumps, etc., may be carried within the passenger and/or baggage compartments. Fuel must be carried in approved leak-proof containers of less than 10 gallons each, placed in fiberboard or wooden boxes. Obvious safety precautions to prevent fire must be observed, such as keeping the fuel containers clear of the electrical circuits and no smoking.

12. PASSENGER BRIEFING. Passengers shall be briefed by the pilot before each flight on the following:

a. Seating and use of seat belts and shoulder harnesses.
b. Proper opening, closing and locking of passenger doors.
c. Emergency procedures to include the location and operation of exits.
d. Location and manual activation of the ELT (Emergency Locator Transmitter).
e. Location of first-aid kit, survival kit, and fire extinguisher.
f. Use of oxygen system.
g. Smoking.

13. REFUELING/FUEL RESERVES. Refueling is the responsibility of the pilot or other company personnel under the pilot's supervision. NO refueling with the engine(s) running, electrical equipment on, or personnel on board. Bonding wires will be used between the service truck tank and the aircraft. A ground wire will be used where proper grounds are available.

Fuel Reserves - The pilot must maintain and have minimum fuel reserves as stated in Federal Aviation Regulations. This means we are not to have the pilot stay up beyond his reserve limitations.

14. SINGLE ENGINE PASSENGER TRANSPORT. Operations of single engine airplanes transporting USFS passengers is limited to daylight VFR flying only. Daylight hours are from 30 minutes before official sunrise until 30 minutes after official sunset. Transporting USFS passengers at night in single engine aircraft is prohibited. IFR flight in single engine aircraft is prohibited. Operators and/or pilots of single engine aircraft may elect to conduct Forest Service ferry flights or cargo flights at night at the discretion of the RAO or Zone Officers.

15. NIGHT LANDINGS. No pilot flying a night mission may land at an airport unless it meets FAA lighting standards.

16. RECON FLIGHTS. Only qualified and designated observers will be used on Recon Flights. Each Forest will include in the Forest Aviation Plan these specific people. No passengers other than those necessary to complete the recon mission will be carried. Except for takeoff and landing, no airplane will be flown below 500 feet AGL (above ground level). Additional information on Recon flights can be found starting on page 25.

17. FLIGHT FOLLOWING. Pilots will familiarize themselves with the most practical and direct route of flight to each destination and proceed accordingly at normal cruise speed. When scheduled departure or arrival times will not be met within 30 minutes, pilots/operators will notify the appropriate Forest Dispatcher of the delay. All flights **MUST** be on a filed flight plan, either with the FAA or a FS dispatcher. FAA flight plans must be filed for point-to-point flights. Recon or similar flights on a Forest will require 15 minute check-ins with the appropriate Forest dispatcher. **NO EXCEPTIONS.** Please use the NICC 800# for pre, post, and enroute mission check-ins.(800-994-6312) when crossing geographic area boundaries.

18. PORTABLE ELECTRONIC DEVICES. Use of any portable electronic device by either the pilot or passengers is strictly prohibited.

19. ANIMALS. No animals (pets) will be transported on Forest Service aircraft or contract aircraft unless special permission is obtained from the Regional Aviation Officer.

20. PRESSURIZATION In unpressurized aircraft, the flight crew must use oxygen above 10,000 feet, if this elevation will be maintained for 30 minutes or more.

At altitudes above 12,000 feet the flight crew is required to use supplemental oxygen, and above 15,000 feet all occupants of the aircraft are required to use supplemental oxygen. That does not mean you cannot ask for oxygen at a lower altitude. These regulations do not apply in pressurized aircraft. The type of aircraft used and whether oxygen is available is the responsibility of the pilot (FAR 135.89)

Operational Policy

All aviation activities will comply with the Federal Aviation Regulations (FARS), the Forest Service Health and Safety Code (FSH 6709.11), and the Forest Service Manual (FSM 5700), Forest Service Handbooks 5709.11 (Fixed-Wing Handbook), 5709.16 (In-Service Flight Operations Handbook), and Interagency Helicopter Operations Guide.

The following are a series of key policy statements that should be generally known and understood by all persons involved with aircraft on the ARNF/PNG. Forest Service Manual 5700 and related handbooks will be needed for a complete library of policy direction. A set is located in the Dispatch Center.

1. Authorized Passengers

Regional Forester approval must be obtained in advance for any non-Government people to fly on Forest Service flights.

Persons scheduled to make detection flights for any purpose must be authorized by the Forest Supervisor or his/her representative.

On all flights only essential authorized passengers will be flown. If they do not have to go, they will not be permitted to ride along.

2. Restricted Air Space - Federal Aviation Regulation (FAR) 91.137

When fire suppression or other emergency conditions require significant aviation activity over an area, air space restrictions should be implemented to give the Forest Service control of the air space. It shall be the responsibility of the Dispatch Center or his/her designated representative to initiate the request for air space restrictions.

The Dispatch Center or his/her designated representative is responsible for requesting cancellation of air space restrictions when the conditions no longer warrant the restrictions. See Air Space Restrictions Section.

3. Military Training Routes

There is one Military Training Route (MTR) located on the Redfeather Ranger District. Aviation users should be aware of MTR's and SUA's. Low level military flights (below 500 feet) are common in the MTR's.

During activity, military aircraft may be encountered from several feet above ground level to several thousand. Extreme vigilance should be exercised to reduce the potential of a mid-air collision.

4. Flight Scheduling

To ensure that only qualified and designated crew members and observers are used on project and personnel transport flights, all flights must be scheduled through FTC.

5. Flight Operations

The pilot is in command of the airplane and is responsible for the safety of his passengers, but the Chief of Party is the Forest Service representative and is responsible for assuring that the pilot is not doing unsafe acts or endangering the passengers. As Chief of Party, or as a passenger, you are responsible for reporting any incident or accident after the flight. Watch-out situations during flight operations are listed below:

a. Flying too low
b. Power lines across canyons

c. Dead-end or box canyons
d. Marginal weather
e. Other aircraft - help the pilot observe!
f. Single engine at night
g. Changing weather conditions

In point-to-point operations, check with pilot to see if he has opened his flight plan prior to the flight. This is done by radio to an FAA Flight Service Station. Seat belts should remain fastened during the entire flight. Do not change route, unless necessary because of weather and only after FSS has been notified.

6. Other Agency Aircraft and Pilots

Aircraft and pilots assigned to other agencies (U.S. Fish and Wildlife, BLM, BIA, etc.) must have current Forest Service cards, OAS cards, or a letter from the Regional Aviation Officer certifying that they are qualified for the mission planned. Military aircraft, including National Guard aircraft and pilots, may not be used without prior approval of the Regional Aviation Officer.

7. Night Flights

No flight will be conducted in a single engine aircraft at night (30 minutes after sundown and 30 minutes before sunrise).

8. Instrument Flights

No flights will be conducted in a single engine aircraft when IFR (Instrument Flight Rules) conditions exist. IFR conditions usually exist when visibility is less than 3 miles and clouds less than 1,000 feet above ground.

9. Low Level Flights

Except for takeoffs and landings, no aircraft will be flown below 500 feet AGL (above ground level). The following exceptions are allowed:
Lead plane missions.
Paracargo drops using multi-engine aircraft.
Aerial ignition seeding, spraying, fertilizing, where an approved project plan is in effect.
Helicopter operations with approved project plan.
Retardant missions.

Before any flight missions (under 1000 feet AGL) are scheduled, a review and briefing of the Forest low level flight hazard map must be accomplished. These maps are posted in the Dispatch Office, Redfeather helibase, Forest Aviation Plans, and in the Aerial Observer's Kit. Extreme caution should be used for all flights conducted under 1,000 feet AGL.

10. Communications - See Plan # 8
Reliable communications must be established between FTC and aircraft flying any mission, except personnel transport, over the Forest. Frequencies will be designated by FTC. See attached Aviation Communications Plan. Communications will be established before take-off, maintained through the flight, and completed after landing. If communications are expected to be interrupted, notify FTC. If communications by radio are lost, abort the flight, return to nearest airport, contact FTC by phone.

11. Emergency Locator Transmitters (ELT)

All aircraft will be equipped with a functional Emergency Locator Transmitter (ELT). (FAR 9152).

Ordering, Dispatching and Controlling Flights (See Plan #2, Fort Collins/BJC SOP's)

1. Ordering Flights

All requests for aircraft, other than scheduled air carriers, will be requested through FTC, with as much advance notice as possible. When requesting a flight, the following information will be provided:

a. Chief of party.
b. Departure point and destination.
c. Dates and times.
d. Purpose of the flight.
e. Number, names, and weight of passengers.
f. Weight and bulk of cargo or baggage.
g. Management Code(s).

2. Dispatching Flights
FTC will dispatch all flights.

3. Controlling Flights

a. Aircraft on point-to-point transportation flights will file FAA flight plans. Aircraft on project type flights on the Forest will file a Forest Controlled Flight Plan. Information needed by FTC will be aircraft type and number, names of passengers, type mission, and hours of fuel on board.

b. All special mission flights will be flight followed (continually monitored and recorded) by the Dispatcher. Position reports will be required every 15 minutes or when a change of direction is made. Positions reports should be by Latitude and Longitude when possible.

4. Chief of Party Responsibilities. (See Appendix E, COP Guidelines)

a.Check aircraft and pilot cards.
b.Ensure passenger/cargo manifest is complete and accurate.
c.Ensure flight plans are filed.
d.Brief the pilot and passengers on mission.
e.Ensure that a Flight Use Report Form 6500-122 is accurately completed and sign it.
f.Have all personnel within weight limitations, assembled, and ready to board aircraft within 15 minutes of scheduled departure.
g.Have telephone numbers of sending and receiving dispatch offices to call them with explanations when delays of more than 30 minutes occur.
h.Provide for the safety and welfare of each person assigned to the manifest list.
i.Ensure all passengers arrive at their respective destinations.

Special Projects - See Plan #6 "Air Operations Safety Plan-Sample"

Aerial projects that require a special project plan:

1. Seeding
2. Spraying.
3. Logging.
4. Fertilizing.
5. Wildlife, timber, and soil surveys.
6. Aerial ignition.

The responsible individual for a proposed special project (not limited to the above) will contact the Forest Aviation Officer to see if a plan is needed. Special project plans will meet direction in FSM 5700, and appropriate manuals.

Shown in Appendix F are some example FS Pilot/Aircraft cards, remember, if you have questions about aircraft or pilots, please contact the Forest Aviation Officer.

Aerial Observer

Training - Only qualified personnel will be selected for air patrol flights. Selected persons should not be subject to motion sickness. Aerial Observers will have completed basic fire school S-130/S-190, S-290 Intermediate Fire Behavior, S-270 Basic Air Operations, and the Aerial Observer Workshop. The S-217 Helicopter Crewmember and Emergency Procedure for Non-Pilots courses are highly recommended. Local training on Radio, GPS, Intercom, Navigation, orientation are highly recommended and can be accomplished through trainee assignments.

The following procedure for flight plan check-ins and search initiation will be followed for all reconnaissance flights:

1. Prior to take off, the Chief of Party will file a flight plan with the FTC dispatcher outlining the route to be flown, expected flying time, fuel supply, cruising speed, pilot's name, passenger's names, color of aircraft and "N" number.

2. The Aerial observer kit will be obtained from FTC.

3. Check in by Air patrol net at 15-minute intervals giving location and direction of flight. Location should be by Latitude and Longitude when applicable.

4. The dispatcher will keep a log of "check-ins" noting location, time, and flight direction.

5. Immediately report any changes in flight plan to ground station.

6. If flight is not during normal working hours, arrangements for someone to staff a ground check-in point will be made. This could be done by using Jeffco or District personnel.

7. If the forest-net radio fails, the flight will be aborted. Notify FAA station on aircraft

radio that the flights is returning to base and request that they notify the Dispatch Center at 970-498-1348.

Listed below are some helpful ideas for air patrol:

1. Reconnaissance and survey - Reconnaissance missions require a high degree of competency and judgment on the part of the pilot and the observer. A knowledge of windage, and proper mountain flying techniques and terrain flying are necessary. Familiarity with the country is very helpful.
The airplane should be flown to provide the observer with the best possible visibility. The objective should be on the observer's side. Flying should be as smoooth as possible to relieve the observer from unnecessary physical strain. The pilot should anticipate the observer's needs and maneuver the airplane rather than force the observer to constantly shift position. Remind the pilot that you are the observer and he is the pilot. He should position the aircraft to best suit your needs as the observer.

Proposed routes should be laid out on a map for each of the foreseeable conditions that may occur. This is done by the Chief of Party or dispatcher. Systematic profiling of critical points along the proposed route is essential. This permits easier determination of alternate flight routes. Flight routes should be planned to position the observer for best ground observation.

Prior to the flight, a briefing will be held with the pilot explaining the purpose of the mission, what is to be expected and all safety considerations are discussed. When selecting aircraft for reconnaissance work, it is best to select an aircraft with high wing profile. It is important to select an aircraft with good performance capabilities. All aircraft do not have the same performance capabilities on hot days with unstable air conditions. If you are not familiar with aircraft and have questions, please talk with the dispatch center or Forest Aviation Officer.

2. Altitude for patrol - the flight altitude is determined by:

a. Intensity of patrol.
b. Amount of haze and its altitude.
c. Width of observation strip
d. Topography type.
e. Amount of cloud and hill shadow.
f. Sun angle and direction.
g. Background.
h. Minimum altitude for safe flight.

The flight will <u>never</u> be less than 500 feet AGL. (FSM 5716.3) Under normal circumstances, most flights are conducted at an intermediate altitude because of terrain and fire reconnaissance responsibilities. A good average altitude for reconnaissance is about 1,500 feet to 2,000 feet above the terrain.

If an altitude is selected that will clear all terrain over the path of flight, with a minimum of maneuvering to avoid the higher isolated mountain peaks, the pilot and observer obtain optimum visual coverage of the surrounding area. Again, knowledge of the country is important in order to determine the best route in relation to drainages, low

passes, and higher peaks.
3. Flying speed - Slow cruise speed is best. Under certain conditions, slower speeds may be necessary to adequately observe specific areas. Both high and low speeds have advantages, depending on conditions and observation objectives.

4. Flight patterns
a. The pilot shall make every effort to maneuver the airplane to provide the best possible view of the terrain. The observer should direct the pilot regarding flight path and will probably request frequent altitude and pattern changes. Each area should be thoroughly investigated.

b. The flight pattern should be worked out from maps, profiles, and actual flights in order that all important areas are directly visible and are in fairly close range to the observer. Air observers should continue to improve the patrol routes and make adjustments to the patrol by the following:

Preparation of maps showing the areas to be covered.

Increase the number of cross-section profiles showing the most important points first.

(3) Adjust flight altitude as more profiles are made.

(4) Place areas with backgrounds which limit visibility on the proper profile for flight path adjustments.

5. Observing
a. Coverage - The first glance outside the airplane should allow for the eyes to readjust focally. Thereafter, the eyes should be moved slowly and systematically encompassing the areas to be observed. Then observe targets which require special attention.

b. Distance

(1) Compare lineal measurements of objects either visually or from maps and aerial photographs. Lakes, runways, and similar landmarks are suitable for this purpose.

(2) Measure the approximate distance by using flight time and air speed. Refer to GPO1969 351410, Flight/Fire Acreage Calculator.

c. Slope - Slopes may be estimated from topographical maps and slope indicators.

6. Safety - The pilot should keep the observer advised of the flight conditions, such as adverse weather or low fuel, and shall ensure that the flight or any requested maneuver can be accomplished safety. At any time the missions appears to be in doubt, cancel the mission and return to base. Remember, the pilot has the responsibility for the safety of the plan and passengers, but the Forest Service observer has the responsibility to see that the mission is accomplished with a margin of safety.

Communication requirements for point-to-point and reconnaissance flights:

1. Aircraft being used must have operating radios. Reconnaissance flights must have an operating radio with Forest and air net channels. Otherwise the mission will be terminated immediately.

2. Check in with FTC or District Dispatcher every 15 minutes or if deviating from planned flight path. This is done by the Chief of Party.

If the Forest net or air net radio fails while airborne, abort the mission and return to base. This applies to reconnaissance flights.

4. The mission will not be reactivated upon landing until communications are restored.

Post flight operations

Upon conclusion of the flight, the following items need to be taken care of with the operator or pilot of the aircraft.

1. A FS-6500-122 Flight Use Report needs to be completed. These items need to be filled out by the Chief of Party. An instruction sheet is in the Form Book. The items that are to be filled out are shown on the example. Unless this form is correctly filled out and signed by both the Contractor and Chief of Party, the Contractor will not be paid. This Form, when completed, is turned into the agency with the contract or rental agreement.

c. **Aerial Observer and Trainee Listing**

Eric Jensen	Maggie Marston (T)
Dyce Gayton	Mike Babler (T)
Mark Nelson	Pete Jobson

Air Patrol Kit

1 GPS Unit
1 Bendix King Radio
2 Headsets
2 Extra batteries
1 BNC "Rubber Duck" Antenna
1 Aviation radio/intercom interface
1 Camera (Film)
1 Timer
1 Survival Kit
1 Set of complete maps
1 FS-6500-122 Flight use report form
5 Incident/Accident report forms
10 Smoke report forms
1 Set of Rental Agreements/Rates
1 Set of aviation use references
Set pens/Pencils

Radio Program (See Plan # 8)

1 Roosevelt Ground
2 Roosevelt Repeaters
3 RMNP Ground
4 Larimer Fire Net
5 Boulder Red 3
6 Roosevelt Work Net
7 Air Guard
8 Air Net (Flight Following)
9 F.E.R.N.
10 Arapaho Ground
11 Arapaho Repeaters
12 Med-Bow Ground
13 Routt Ground
14 Pike/San Isabel Ground

DECISION CRITERIA FOR GO/NO GO RECONNAISSANCE FLIGHTS

The following chart will be used as a key part of the decision making process on whether to proceed with a scheduled flight. If one or more "NO" criteria occur, flights will be cancelled or terminated until conditions improve.

VFR CONDITIONS

GO Clouds greater than 1000 feet above the ground.

NO GO Clouds less than 1000 feet above the ground.

GO Visibility in the area is 3+ miles.

NO GO Flight will not continue if rain, snow or fog cause less than 3 miles visibility.

NOTE: It is permissable to continue the flight if smoke and/or haze cause less than 3 miles visibility. But, under no circumstances will a flight continue with less than one mile visibility.

AIRSPACE CONGESTION

GO Proximity to other aircraft greather than 500 feet vertically and 200 feet horizontally.

NO GO Proximity to other aircraft less than 500 feet vertically and 200 feet horizontally.

ESTIMATED WINDSPEED

GO Windspeed 0 to 15 miles per hour.

GO Windspeed 15 to 25 miles per hour (USE CAUTION).

NO GO Windspeed greater than 25 miles per hour.

TURBULENCE

GO Light turbulence is occurring.

GO Moderate turbulence is occurring.

NO GO Severe turbulence (loose articles are tossed around the aircraft cabin and seat belts are required to retain passengers in their seats).

Incident and Accident Reporting - See Plan #1 Aviation Incident/Accident Response Guide
Aviation Incident/Accident Response Guide (Aviation Incident/Accident Guide)

Any accident or incident must be reported to a FS dispatcher or other official **immediately**. Names and phone numbers of personnel available for accident/incident notification are:

NAME	WORK	HOME	PAGER
Mark Nelson	970-498-1348	970-282-4377	490-5291
Mike Foley	970-498-1245	970-226-5336	226-7310
Tom Landon, Regional Aviation Officer	303-275-5740	303-670-4457	

Any incident/accident reports will be filled out on an Aircraft Initial Report (FS-5700-14). These should be filled out immediately and reported to the Forest Aviation Officer. Listed below are the definitions and reporting procedures.

Definitions:

1. Major accident - Total destruction or substantial damage to the aircraft and/or serious or fatal injury to personnel. Cost to repair is estimated to exceed $5,000 and/or 200 hours labor.

2. Minor accident - Damage to aircraft components and/or minor injury to personnel. Cost to repair is in excess of $1,000 and/or 50 hours labor, but less than $5,000.

3. Incident - Any air or ground mishap, malfunction, or situation involving aircraft and/or personnel which results in deviation from standard procedures and has the potential or resulting in an accident. All occurrences involving actual or potential injury, death, or damage must be reported. Examples of incidents are:

a. Precautionary or emergency landings, such as for fuel exhaustion.
b. Damage to any aircraft component less than $1,000.
c. Engine malfunction resulting in an emergency landing or in-flight shutdown; includes damage to power-plant and/or accessories.
d. Loss of partial failure of a system or component essential to safe flight.
e. Near misses or obstacles or other aircraft during flight or ground operation.
f. Bird strikes.
g. Smoke in cockpit or fire in flight.
h. Jettisoning or loss of cargo, sling loads, retardant, or other chemicals.
i. Lightning strikes.
j. Violation of pilot duty limitation.
Overloading of aircraft.

4. Hazard - A situation existing on-the-ground or in the air which could create a problem when aircraft or personnel are introduced. Examples of hazards are:

a. Use of unqualified personnel or insufficient number of personnel managing air operations.
b. Improper location of helispots or flight routes.
c. Lack of improvement or improper marking of heliports and helispots.
d. Use of unapproved aircraft and pilots.
e. Exposure of personnel to excessive noise and dust without adequate ear and/or eye protection.
f. Observed deviations of written policies and/or directives.
Reporting - All major and minor aircraft accidents and incidents will be reported by the Chief of Party. Reports will be made on Form FS-5700-14, Aircraft Initial Report. These are to be submitted to FAO within 2 days after the incident occured.

Reports of accidents and incidents are used to determine trends and to help in preventing future mishaps. Often they aid in pointing out areas where training programs should be developed. It is important to the aviation safety effort that all incidents are reported promptly. These reports should be reviewed by Forest Aviation Officers and routed according to FSM 5710, 6730, and FSM 5309.11.

Hazard reports may be made by telephone or memo to the appropriate safety officer or Forest Aviation Officer.

Form FS-5700-14, Aviation Safety Communique. See webpage (FS 5700-14)
(www.aviation.fs.fed.us/library/safecom.pdf)

Air Space Restrictions (See Appendix A, TFR Form)

The purpose of designating an area within which temporary flight restrictions apply is to prevent a hazardous congestion of unessential aircraft over a forest fire, disaster site, or other event which may generate a high degree of public interest. Temporary flight restrictions are described fully in FAR 91.137.

When it becomes necessary to restrict nonparticipating aircraft from the area of forest fire-fighting aviation operations, the Dispatch Center Manager or Forest Aviation Officer will request the air closure. The Rocky Mountain Area Coordination Center will coordinate with the FAA. The normal closure is 2,000 feet AGL and a 5-mile radius from center of the fire. A legal description, VOR coordinates and Latitude and Longitude will be necessary for closure.

Reconnaissance flights will be at least 2,000 feet above maximum elevation of air tanker during air tanker drops and will remain 1,000 feet above terrain during helicopter operations. Communications will be established during any operation and be maintained by both aircraft.

If a lead plane is with the air tanker he/she will have control responsibility.

The FAA establishes temporary airspace restrictions for three purposes:

1. To protect persons and property on the surface or in the air from a hazard associated with an incident on the surface. An example of this would be airspace restrictions over an erupting volcano.

2. To provide a safe environment for the operation of disaster relief aircraft. An example is a wildland fire with airtankers and helicopters participating in a suppression effort.

3. To prevent unsafe congestion of sightseeing and other aircraft above an incident or event which may generate a high degree of public interest. An example would be sightseeing aircraft circling a large train wreck.

Forest Service requests for restricted airspace will normally be for purposes 1 or 2. The majority of our requests will fall under purpose 2. The FAA requires specific information for airspace restriction requests. It is important that a workable, safe altitude which is adequate for the complexity of the situation be requested.

The following can be used as a general guide:

The standard airspace restriction (2,000 feet above the surface and within 5 nautical mile radius) will normally meet the needs of the less complex incidents.

Operations utilizing helicopters, airtankers, and an air attack supervisor are more complex and require a minimum altitude of 3000 feet above ground level. This size may require substantial increases as complexity increases.

Temporary airspace restrictions only restrict, they normally do not prohibit aircraft entry. Entrance requirements depend on the purpose of the restriction and the category of the aircraft requesting entry. Five different categories of aircraft purposes are allowed in restricted airspace:

Category 1. Aircraft participating in the disaster relief effort.

Category 2. Aircraft carrying law enforcement officials.

Category 3. Aircraft operating directly to or from an airport within the restricted area, and aircraft that due to weather are unable to avoid the area and will not interfere with relief aircraft operations.

Category 4. Aircraft operating under positive control of air traffic control.

Category 5. Aircraft carrying accredited news representatives.

If the restricted airspace was initiated for purpose No. 1, to protect persons and property on the surface or in the air from a hazard associated with an incident on the surface, then:

Only aircraft from category 1 are allowed inside the restricted airspace.

If the restricted airspace was initiated for purpose No. 2, to provide a safe environment for the operation of disaster relief aircraft, then:

Category 1 and 2 aircraft are allowed with no restrictions.

Category 3 aircraft are allowed if notification is given to the FAA and the flight will not hamper relief aircraft operations.

Category 4 aircraft are allowed at the discretion of air traffic control.

Category 5 aircraft are allowed over the area of the restriction if on a FAA/VFR flight plan and they don't descend below the altitude specified for operations of disaster relief aircraft. Descent below this altitude is permissible with the consent of the official in charge of the incident.

These are the procedures and conditions they must follow:
1. Upon contact the District or Incident, refer then to the Dispatch Center.

2. They must have an operable radio to contact the Dispatch Center, Air Attack Supervisor/LeadPlane, or Helibase Manager. Primary frequency will be 122.95.

3. There must not be any aviation operation activity going on at the time.
4. They may enter the area when aircraft are not working or under direction and coordination of Air Operations Director and/or Air Attack. This is after they establish radio contact.

5. They should get their coverage and be done when air operations begin or are directed to leave by Air Operations.

6. They should notify Air Operations when they leave the area.

7. They may only land at base heliport if they are given permission by Air Operations.

If the restricted airspace was initiated for purpose No. 3, to prevent unsafe congestion of sightseeing and other aircraft above an incident or event which may generate a high degree of public interest then:

Category 1, 2, and 3 aircraft may enter with no restrictions.

Category 4 aircraft will be allowed into the restricted airspace at the discretion of air traffic control.

Category 5 aircraft only need to file an FAA flight plan. No altitude restrictions are imposed.

There may be a misunderstanding regarding the presence of news media helicopters in restricted airspace over wildland fires under the jurisdiction of the Forest Service. We must remember that the news media has an obligation to gather and report the news to the public. It is our responsibility to provide an avenue to accomplish this and at the same time provide a safe environment for our fire suppression aircraft. This can be accomplished very easily through cooperation and coordination with all concerned parties.

Air Tanker Operations: See Plan #3 Jeffco Airtanker Base Operating Plan

1. The Jeffco air tanker is dispatched by the Fort Collins Dispatch Center according to approved specific action and staffing guides. Tanker shall be dispatched on a first request basis. If competition between fires exist, threat to life or property (high resource value) shall take precedence. (Plan #2)

Initial attack on confirmed wildfires commands first priority for air attack.

2. A lead plane will be requested on any fire that appears to be needing continued air tanker use over and above initial attack action or at any time when the air tanker pilot is not initial-attack qualified. If a lead plane is available at Jeffco it will be ordered as a safety precaution. Multiple aircraft will also require a lead plane. A leadplane ordering matrix is provided to help determine the need/requirement for a leadplane or air attack.

3. A base manager will be assigned to this base at all times when an air tanker is stationed at the base. The base manager is responsible for all ground service operations.

4. The Colorado State Forest Service contracts a Single Engine Airtanker on an annual basis. This resource may be based at Jeffco or at Christman field Northwest of Fort Collins. This operation is under the management of the State Forest Service. The Annual Operating Plan will be available in the Fort Collins Dispatch Center. Every effort should be made to standardize the use of this resource using federal aviation guidelines and policy.

LEAD PLANE AND AIR ATTACK REQUIREMENT GUIDELINES

Situation	Lead Plane Requirement	Air Attack Requirement
Non-Initial Attack Rated Pilot	Required to be on scene	None
Dropping of Retardant in Congested Area	Required to be on scene	Must be ordered
Multiple Aircraft Operating in a Congested Area	None Unless an Air Tanker Operation	Must be ordered
Modular Airborne Fire Fighting System (MAFFS)	Required to be on scene in addition the lead pilot must be MAFFS trained	Must be ordered
Multiple Airtanker Operations (More than One)	Must be ordered	Optional, Unless other Criteria are Met
Requested by Airtanker Pilot	Must be ordered	N/A

Mix of Different Tactical Aircraft	Optional Unless Airtanker Operations Dictate Need	Must be ordered
Retardant Operation Conducted During the Period 1/2 Hour Before Sunrise to 1/2 Hour After Sunrise, and 1/2 Hour Before Sunset to 1/2 Hour After Sunset	Must be on scene or Air Attack must be on scene	Must be on scene or Lead Plane must be on scene
Conditions of Visibility and/or Terrain Create a Serious Hazard to Resources	Optional	Must be ordered --- Ground or Air

Other situations may also warrant a Lead Plane or Air Attack aircraft. It is the policy of this region that any time an Air Tanker is dispatched to a incident in region two, and if there is also a Lead Plane available at the same base as the Air Tanker, it will also be dispatched.

Helicopter Operations

1. The helicopter foreman will be held accountable for implementation of helicopter use policies, such as observing allowable gross weight and no flying during hazardous wind conditions, poor visibility conditions, or inoperable radio communication gear or other equipment.

2. A helibase manager and/or a helicopter manager will be assigned to all helicopter operations. (The helitack manager may act in the capacity of Helibase Manager on single helicopter use projects).

3. A helispot manager will be assigned to all helicopter landing spots that will be used for loading and unloading personnel and equipment. Wind direction and velocity will be monitored at all landing spots.

4. Only qualified persons shall be assigned to manage helicopters and helitack crews.

5. Helitack crewmembers will have the S-217 Interagency Helitack 16-hour training. Crewmembers will not be used on a project until required training has been received.

6. Helitack/Helicopter Managers will have completed the Helicopter manager training and attended the annual helicopter manager workshop. If the Workshop is not attended on an annual basis the qualifications will not be current.

7. Fire resistant clothing and helmets will be worn by all personnel riding in US Forest Service helicopters.

8. Ground crews will wear hardhats, eye and ear protection when working within 100 feet of a helicopter with its rotor turning.

9. A dust abatement program will be established for heliports and helispots. The best dust palliative available will be used, i.e., grass pad, sprinkling with water, polybinder, etc.

10. A helicopter load calculation form is required for all missions.

11. All helicopter operations that are project work, nonfire-related will have an approved helicopter operations safety plan. See Plan #6 Special Project Aviation Safety Plan-Sample.

Outservice Cooperation

1. Requests by local cooperating agencies for the use of aircraft under contract to the US Forest Service will be made directly to the FTC Dispatcher for action.

2. Assurance of proper payment must be obtained or be a part of approved Cooperative Agreements prior to dispatching aircraft.

3. In the interest of safety, air attack will be delivered to out-service agencies as a complete package in that air observer planes, air attack boss, lead plane, and radio communications will be supplied by the US Forest Service as needed to do the full air attack job.

4. Communications must be established directly between the responsible individual representing the other agency and the US Forest Service Air Attack Boss.

5. For private land fires the FTC Dispatcher will notify the appropriate Colorado State Forest Service Office of action taken.

Inspections

1. The Forest Aviation Officer will inspect all permanent aerial facilities under the jurisdiction of the Forest a minimum of one time each year. Preferably at the beginning of the fire season.

2. All inspections will be documented listing corrective actions to be taken and showing the responsible parties. Safety of operations is the primary concern.

3. Temporary aerial facilities will be inspected for safety on a continuing basis by the air service manager assigned to the facility. The Forest Aviation Officer will inspect each facility at least once during its operation to assure the prescribed standards and procedures are being followed.

4. The Forest Aviation Officer will attend Aircraft and Pilot inspections for vendor agreements when possible. Aircraft needs, agreements, payments, and records will be administered by the FAO.

Training

1. The Forest Aviation Officer is responsible for training all Forest personnel assigned to aviation related duties.

2. No one will be assigned to aviation related duties that is not fully qualified for the job. This relates to job attitude, formal training, and on-the-job training.

3. The Forest avition Officer and designated acting will complete the following training when applicable. S-130/190 Basic Fire School, S-270 Basic Air Operations, S-217 Helicopter Crewmember, and IAMS (Interagency Aviation Management and Safety. Currency with ground level aviation operations should be maintained.

4. An employee aviation orientation session should be held on each unit once a year.

Computer Applications

The following computer programs will be used for aviation management. Aviation management personnel will have working knowledge of these programs. They Are:

1. AMIS - Aviation Management and Information System.
Used to record Flight Use Reports FS-6500-122

2. CAHIS - Computer Aviation and Hazard Information System
Used for Flight planning, Airport Information, lightning detection hazard tracking and navigation.

Aircraft Incident/Accident Action Plan

Refer to plan #1 (Aviation Incident/Accident Response Guide) (www.fs.fed.us/r2/fire/docs/aircraft_crash_SAR_guide.PDF)

This plan establishes the immediate actions to be taken in the event of an overdue aircraft, or an aircraft incident/accident. It outlines the procedures necessary to activate emergency search and rescue services as well as associated support activities in as rapid and orderly a fashion as possible.

Accident Prevention Checklist

Crash/rescue planning includes good prevention programs. The following (although not a crash/rescue plan) is a recommended checklist to be used as a daily guide by air tanker base managers and helicopter managers to ensure their facilities are ready to handle an unplanned event.

1. Fire extinguisher - (1 ea. 20 lb. B.C. per A/C) proper type, operational and readily available.
Phone number of company who will refill and test extinguishers each year:
_____.

2. Crash/rescue plan posted and phone numbers current. The plan should include the authority of local and civil officials.

3. Hazard map posted and current.

4. Airport/heliport diagram or photo.

5. Local hospital helipad diagrammed; also flight direction and miles to more distant hospital.

6. First aid kit, including litter, available and complete.

7. Fixed wing and helicopter parking area well marked.

8. Clean airfield and heliport.

9. "Flammable", "No Smoking", and "Authorized Personnel Only" signs posted.

WEB Based & Reference Materials:

The following materials will be kept as reference materials in the Dispatch Center. These items will be reviewed and updated annually.

FTC Area Aviation Plan
http://www.fs.fed.us/arnf/fire/ftcavplan.PDF

Aviation Incident/Accident Response Guide (Plan # 1)
http://www.fs.fed.us/r2/fire/docs/Aircraft_Crash_SAR_Guide.PDF

FTC/BJC Dispatch SOP's (Plan # 2)

Jeffco Airtanker Base Operations Plan/Jeffco ATB Crew/Pilot Orientation Guide (Plan # 3)

Fort Collins/Loveland SEAT Operations Plan (Plan # 4)
http://www.fs.fed.us/arnf/fire/fnlavplan.PDF

Redfeather Helibase Operations Plan (Plan # 5)
http://www.fs.fed.us/arnf/fire/helibase.PDF

Special Projects Air Operations Safety Plan (Plan # 6)

Boulder Helitack Operations Plan (Plan # 7)

Northern Front Range Interagency Communications Plan (Plan # 8)
http://www.fs.fed.us/arnf/fire/radio.PDF

FTC Area Aviation Hazard Map (Plan # 9

CWN Vendors (pilot qual/aircraft cert)
http://www.aviation.fs.fed.us/carding/index.asp

Aviation Management Information System User's Guide (AMIS)
(www.fs.fed.us/fire/planning/nist/AMIS_User_Guide.pdf)

National Aviation Management Safety Plan-1996 Draft version

Region 2 Aviation Operations Plan
www.fs.fed.us/r2/fire/docs/aviation_operations_plan_2002.PDF

Regional Aviation Management Safety Plan

Region 2 Forest Health Management Aviation Operations and Accident Prevention Plan (Bugs)

Forest Service Manual (5700) Aviation Management Manual
(www.fs.fed.us/cgi-bin/Directives/get_dirs/fsm?5700)

Interagency Helicopter Operations Guide (FSH 5709.12)

http://www.nifc.gov/ihog/

Forest Service Handbook (5709.14) Smokejumper/Paragargo Handbook
www.fs.fed.us/cgi-bin/Directives/get_dirs/fsh?5709.14

Forest Service Handbook (5709.16) Flight Operations Handbook
www.fs.fed.us/cgi-bin/Directives/get_dirs/fsh?5709.16

Federal Aviation Regulations Guide
http://www.access.gpo.gov/nara/cfr/cfrhtml_00/Title_14/14tab_00.html

Airmans Information Manual

Air Space Coordination Guide
www.fs.fed.us/r6/fire/aviation/airspace/asguide.html

Interagency Airtanker Base Operations Guide

Airtanker Base Directory
www.fs.fed.us/fire/aviation/basedir.html

Airtanker, Helicopter and Large Transport Information
http://fsweb.wo.fs.fed.us/aqm/fire_aviation_information/misc/yellowb.pdf

Aerial Ignition Systems Guide

Interagency Call-When-Needed Helicopter Contracts

JeppGuide Airport Directories (North Central/Western Editions)

Interagency Aviation Technical Assitance Directory
www.aviation.fs.fed.us/library/directory.pdf

Aviation Transport of Hazardous Materials Guide
http://205.173.2.4/library/hazmattoc.htm